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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/338,176	06/22/1999	HEUNG-YEUNG SHUM	3382-52053	1062

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EXAMINER

WONG, ALLEN C

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 04/23/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

27

Office Action Summary

Application No.

09/338,176

Applicant(s)

SHUM ET AL.

Examiner

Allen Wong

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 2/6/03 have been fully read and considered but they are not persuasive.

Claims 1-8

Regarding lines 18-19 on page 2 of applicant's remarks about claim 1, applicant contends that Moriya et al. (US 6,046,745) does not teach or suggest "dividing the sequence of image into segments." The examiner respectfully disagrees. As stated before, Moriya's figure 40, the actual image data sequence is moved to element 4038, where the sequential image data is divided into segmented image data such as sub-figures like points, lines, planes, as disclosed in col.29, ln.28-31. Thus, it is broadly interpreted that Moriya teaches the actual image data sequence is segmented into sub-figures, sub-parts or segments.

Dependent claims 2-8 are rejected for the same reasons as above.

Claims 9-22

With regards to applicant's arguments about claim 9, the applicant asserts that "dividing the sequence into segments..." is not disclosed or suggested by Moriya. The examiner has already addressed this issue, as discussed for claim 1, in the previous paragraph. Please peruse the above paragraph. Dependent claims 10-22 are rejected for the same reasons as above.

Claims 23-30

Art Unit: 2613

Regarding applicant's arguments about claim 23, the applicant argues that "segmenting the sequence..." is not disclosed or suggested by Moriya. The examiner has already addressed this issue, as discussed for claim 1, in the above paragraphs. Please peruse the above paragraphs. Dependent claims 24-30 are rejected for the same reasons as above.

Claims 31-37

With regards to applicant's arguments about claims 31, 36 and 37, the applicant states that the division of the sequence of images or frames into segments is not disclosed or suggested by Moriya. The examiner has already addressed this issue, as discussed for claim 1, in the above paragraphs. Please peruse the above paragraphs. Dependent claims 32-35 are rejected for the same reasons as above.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Moriya (6,046,745).

Regarding claim 37, Moriya discloses an apparatus for recovering a three-dimensional scene from a sequence of two-dimensional frames by segmenting the frames, comprising:

means for capturing two-dimensional images (fig.40, element 4030 obtains the images and also note that two-dimensional features are taken into consideration by element 4032);

means for dividing the sequence into segments (fig.40, the actual image data sequence is moved to element 4038 for division into segments);

means for calculating a partial model for each segment that includes three-dimensional coordinates and camera pose for features within the frames (fig.40, element 4040 uses the information extracted by element 4036 to obtain the camera parameters 4034, ie. camera rotation and translation, and vital image three-dimensional feature data stored at element 4038);

means for extracting virtual key frames from each partial model (fig.40, note element 4036 extracts virtual key frames data from elements 4032, 4037 and 4038);
and

means for bundle adjusting the virtual key frames to obtain a complete three-dimensional reconstruction of the two-dimensional frames (fig.40, element 4040 bundle adjusts the virtual key frames and thus produces the complete three-dimensional reconstruction of two-dimensional frames at the output end).

Note claims 1, 2, 4-7, 9-18, 20, 21, 23, 24, 27-29, 31 and 33-36 have corresponding elements.

Regarding claim 3, Moriya discloses the feature points of segmented image data are stored (fig.40, elements 4032 and 4038).

Regarding claims 8, 22 and 30, Moriya discloses computer executable instructions are performed (fig.40, element 4040 and col.29, lines 35-38).

Regarding claims 19 and 25, Moriya discloses the identification of feature points in the frames by motion estimation (fig.40, elements 4032 and 4038).

Regarding claim 26, Moriya discloses the corners are used as feature points (col.29, lines 28-31).

Regarding claim 32, Moriya discloses the representative frames have uncertainty (fig.40, element 4040 determines the representative frames have uncertainty and processes the images accordingly to produce three-dimensional images).

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2613

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

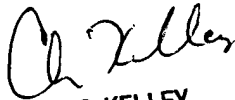
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen Wong whose telephone number is (703) 306-5978. The examiner can normally be reached on Mondays to Thursdays from 8am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Kelley can be reached on (703) 305-4856. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

Allen Wong
Examiner
Art Unit 2613

AW
April 8, 2003


CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600